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$$=[\sin^2(x+y)-\sin^2 z][\sin^2 z-\sin^2(y-x)]$$

$$=\sin^2 z[\sin^2(x+y)+\sin^2(y-x)-\sin^4 z-\sin^2(y+x)$$

$$=2\sin^2 x\sin^2 y+2\sin^2 x\sin^2 z+2\sin^2 y\sin^2 z-4\sin^2 x\sin^2 y\sin^2 z-\sin^4 x$$
$$-\sin^4 y-\sin^4 z$$

$$=2\Sigma\sin^2 \Pi(xz)-4\Pi\sin^2 x-\Sigma\sin^4 x.$$

$$1-\sin(\Sigma)\sin\Pi(y+z-x)=1+\Sigma\sin^4 x+4\Pi\sin^2 x-2\Sigma\sin^2\Pi(xy)....(1).$$

$$\Sigma\cos^4 x-2\Pi\cos^2 x+2\Pi\sin^2 x=\cos^4 x+\cos^4 y+\cos^4 z-2\cos^2 x\cos^2 y\cos^2 z$$
$$+2\sin^2 x\sin^2 y\sin^2 z=1+\sin^2 x+\sin^4 y+\sin^4 z+4\sin^2 x\sin^2 y\sin^2 z$$
$$-2\sin^2 x\sin^2 y-2\sin^2 x\sin^2 z-2\sin^2 y\sin^2 z$$
$$=1+\Sigma\sin^4 x+4\Pi\sin^2 x-2\Sigma\sin^2\Pi(xy)....(2).$$

$\therefore$ (1)=(2). $\sin(a+b)\sin(a-b)=\sin^2 a-\sin^2 b$ gives (1).

No solutions of Problems 121, 122, 123, and 127 have been received. ED.

NOTES.

BIOGRAPHICAL SKETCH OF THE LATE HON. JOSIAH H. DRUMMOND.

The story of the life of Dr. Drummond when fully written would comprise a large part of the political history of the State of Maine during the last half a century. Only the leading facts in his life can here be narrated. For a more extended narrative of his life, the reader is referred to the newspapers of Portland, Maine, all of which at the time of his death gave very fully the leading events of his life.

Josiah H. Drummond was born in Winslow, Maine, August 30, 1827, and died at Portland, Maine, October 25, 1902. He graduated from Colby in 1846; read law in the office of Boutelle & Noyes in Waterville; was admitted to the bar of Maine in 1850, and to the bar of California, to which State he made a business trip, in 1851; returned to Maine and began the practice of law at Waterville; left the democratic party in 1855 on the anti-slavery issue and became one of the founders of the Republican party; was elected to the House of Representatives of Maine in 1857 and 1858, serving as Speaker; elected to State Senate in 1859, he was almost immediately after the beginning of the session elected attorney general and was three times re-elected; removed to Portland in 1860, was elected to the House from Portland in 1869, and declined a re-election in 1870; reeeived the degree of LL. D. from Colby College in 1871. He was a practicing lawyer, vice president of the trustees of Colby; a director of the Union Mutual Life Insnrance Company, and of the Union Safe Deposit and Trust Company, and clerk of the Maine Central corporation.

In 1875, Mr. Drummond was urged by his friends to become a candidate for United States Senator. With reluctance he allowed his name to be used, but was defeated owing largely to the influence of the late Thomas B. Reed. Mr. Reed and Mr. Drummond were strong personal friends, but he never asked "Tom" as he called him to the last, to change his position.

In 1875 and 1884 he was a delegate to the Republican National Convention, and in 1884 was the recognized Blaine leader.

While Mr. Drummond was a very busy man and actively interested in everything relating to the political interests of the State, and never allowing outside matters to interfere with his professional duties, he still found time to read some mathematical journals and solve some problems.

Dr. Drummond was very skillful in solving in a very elementary way some of the difficult problems in Diophantine Analysis. In this department of analysis he was especially interested, and the MONTHLY contains many of his excellent solutions.

For a portrait of Dr. Drummond see Vol. IV, No. 10. B. F. F.

This number completes the ninth volume of the MONTHLY. With Dr. Dickson as associate editor, we can assure our readers, with much confidence, that the tenth volume will contain much material of permanent value. In order that no hindrance be put in the way of future improvement, it is desirable, and necessary, that every one of our subscribers not only continue his subscription for the coming year, but also secure, if possible, one new subscriber. In order to encourage our subscribers to help increase our subscribtion list, we will send the MONTHLY one year to one old subscriber and one new one for $3.00. May we have the help of all in this matter? B. F. F.

By an order of the French Minister of War the use of logarithmic tables and calculations, based upon the *centesimal division of the right angle*, will be compulsory at the Polytechnic of Paris and at the military academy of Saint-Cyr after the year 1905. Five-place tables for the new and old system are issued by the French geographic service of the army. The experiences with the new division made by the French navy were most satisfactory. ARNOLD EMCH.